East San Joaquin Water Quality Coalition

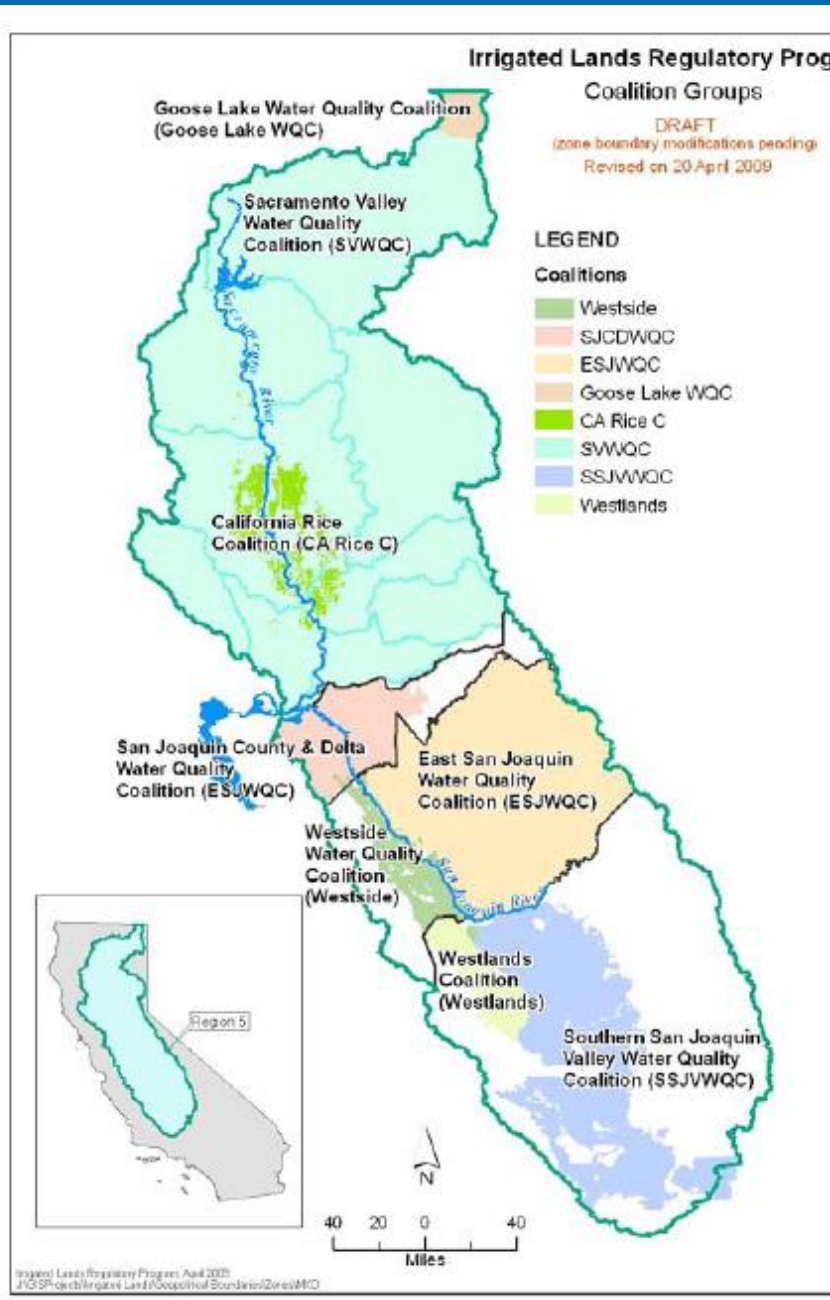
Irrigated Lands Regulatory Program and Nitrogen

Parry Klassen
Executive Director

Merced River

Central Valley Coalitions

- **Sacramento Valley Water Quality Coalition**
  - Bruce Houdesheldt
- **California Rice Commission**
  - Tim Johnson
- **Goose Lake Water Quality Coalition**
- **San Joaquin County & Delta Water Quality Coalition**
  - Michael Wackman
- **Westside San Joaquin River Watershed Coalition**
  - Joseph C. McGahan
  - David Cory
- **East San Joaquin Water Quality Coalition**
  - Parry Klassen
  - Wayne Zipser
- **Southern San Joaquin Valley Water Quality Coalition**
  - David Orth
- **Westlands Coalition**
  - Sue Ramos



Coalition Participation and Spending

- 7 million irrigated acres in Central Valley
- 4.8 million acres enrolled in current program
- Coalition spending 2004 – 2010:

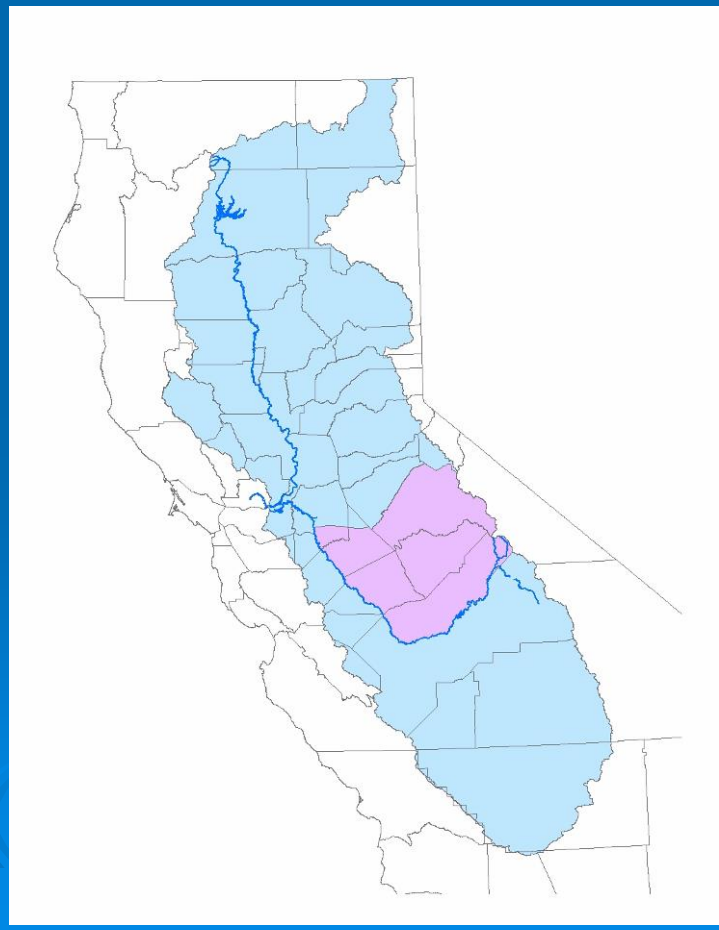
$31.8 million

- Water/Sediment monitoring
- Reports to Regional Water Board
- Member outreach and education
- Includes 12 cents per acre per year paid to State Water Board (now 56 cents/acre)

East San Joaquin Water Quality Coalition

Coalition Overview

- In operation since 2003
- **3,950 Landowner / operators**
- **706,336 irrigated acres**
  - Madera, Merced, Stanislaus, Tuolumne, Mariposa counties
- *We manage group permit for our members*



East San Joaquin Water Quality Coalition

10 member Board of Directors

Parry Klassen, Board Chairman	Coalition for Urban Rural Environmental Stewardship
Wayne Zipser, Vice-Chairman	Stanislaus Co. Farm Bureau
Anja Raudabaugh	Madera Co. Farm Bureau
Amanda Carvajal	Merced Co. Farm Bureau
Gary Caseri	Stanislaus Co Ag Commiss. (retired)
Bill Brush	B&B Ag Consulting
Bill McKinney	Almond grower
Alan Reynolds	Gallo Vineyards, Inc.
Jim Wagner	Wilbur Ellis Co.
Michael Niemi	Turlock Irrigation District

Non-voting

David Robinson	Merced County Agricultural Commissioner
Stevie McNeill	Madera County Agricultural Commissioner
Milton O'Hare	Stanislaus County Ag Commissioner
Diana Waller	Natural Resources Conservation Service
Dennis Wescot	San Joaquin River Group Authority

Waste Discharge Requirements
Irrigated Lands Regulatory Program

ESJWQC WDR adopted December 7, 2012

First of seven "third party" coalitions to get WDR

- Next WDR adoption hearing: September 19, 2013
  - South San Joaquin Water Quality Coalition (adopted)
  - Remainder of CV Coalitions adopted by March 2013 (?!)

ESJ starting on new requirements

- Apply to be third party (approved January 13, 2013)
- Develop templates with other coalitions, commodity groups
- Perform groundwater assessment (due January 2014)
- Begin new surface water monitoring requirements (2014)
- "Membership Holiday" ended May 13; now apply to RB first

Waste Discharge Requirements
Irrigated Lands Regulatory Program

Latest "wrinkles" in nitrogen reporting from "Recommendations Addressing Nitrate in Groundwater" (SWRCB)

- *State Water Board releases draft order for Central Coast*
  - Refers to formation of Expert Panel (requirement originated from UCD/Harter report recommendation)
  - Panel will answer "questions" posed by advisory group
  - No official timeline in place yet but expect panel formation by September 2013

- *CDFA Forms "Interagency Task Force"*
  - Develop "Nitrogen Tracking and Reporting System"
  - Recommendations by September 2013 to State Water Board

CDFA Task Force

Invitation to 28 entities to participate

- *From CV, Central Coast, agencies, ag groups, EJ, universities*

First meeting in July; complete work by September 2013

- Develop “Nitrogen Tracking and Reporting System”
- Review how other states track N use
- Will “seek” consensus on approaches
- Final recommendations will go to State Water Board, Expert Panel

Expert Panel

Preliminary indications of makeup & timing

- **7-10 Participants**
  - **Including representative(s) from farming**
- **Cal Poly directed**
- **Advisory Committee will provide reviews**
  - **Including ag, environmental, EJ**
- **Convene 9/13; Draft 1/14; Final 2/14**
  - **3 Public Workshops**

Expert Panel

Appointed by State Water Board

- Makeup: broad spectrum of experts from relevant disciplines and hold several public workshops to take input and comment before making proposals to the State Water Board.
- Answers to these questions will inform the development of the agricultural regulatory program in the Central Valley, Central Coast and elsewhere in the State.

Expert Panel

Issues to be reviewed by the Expert Panel

- Develop or endorse a methodology for determining when a particular farm poses a risk to loading nitrates to groundwater. (p. 34).
- Develop a template for nutrient balance determinations (p. 38).
- Consider the best approaches to evaluate nitrate discharges to groundwater (p.38).

Water Monitoring Program Objectives

- Characterize discharge from irrigated agriculture in the Coalition region
- Identify locations where water quality objectives are violated
- Identify potential source(s) of the exceedances
- Promote to landowners the implementation of management practices to address water quality problems *when needed.*

Waste Discharge Requirements

Irrigated Lands Regulatory Program

Groundwater Assessment Report

- Rank land vulnerability based on Assessment Report
  - **High Vulnerability**

    Areas ID'd using DPR pesticide groundwater protection areas, State Water Board vulnerable areas

  - **Low Vulnerability**
    - Keep farm assessment / nitrogen budgets on farm

Draft High Vulnerability Groundwater Areas & Farmland Mapping and Monitoring Program (FMMP) Areas

East San Joaquin Water Quality Coalition

DRAFT

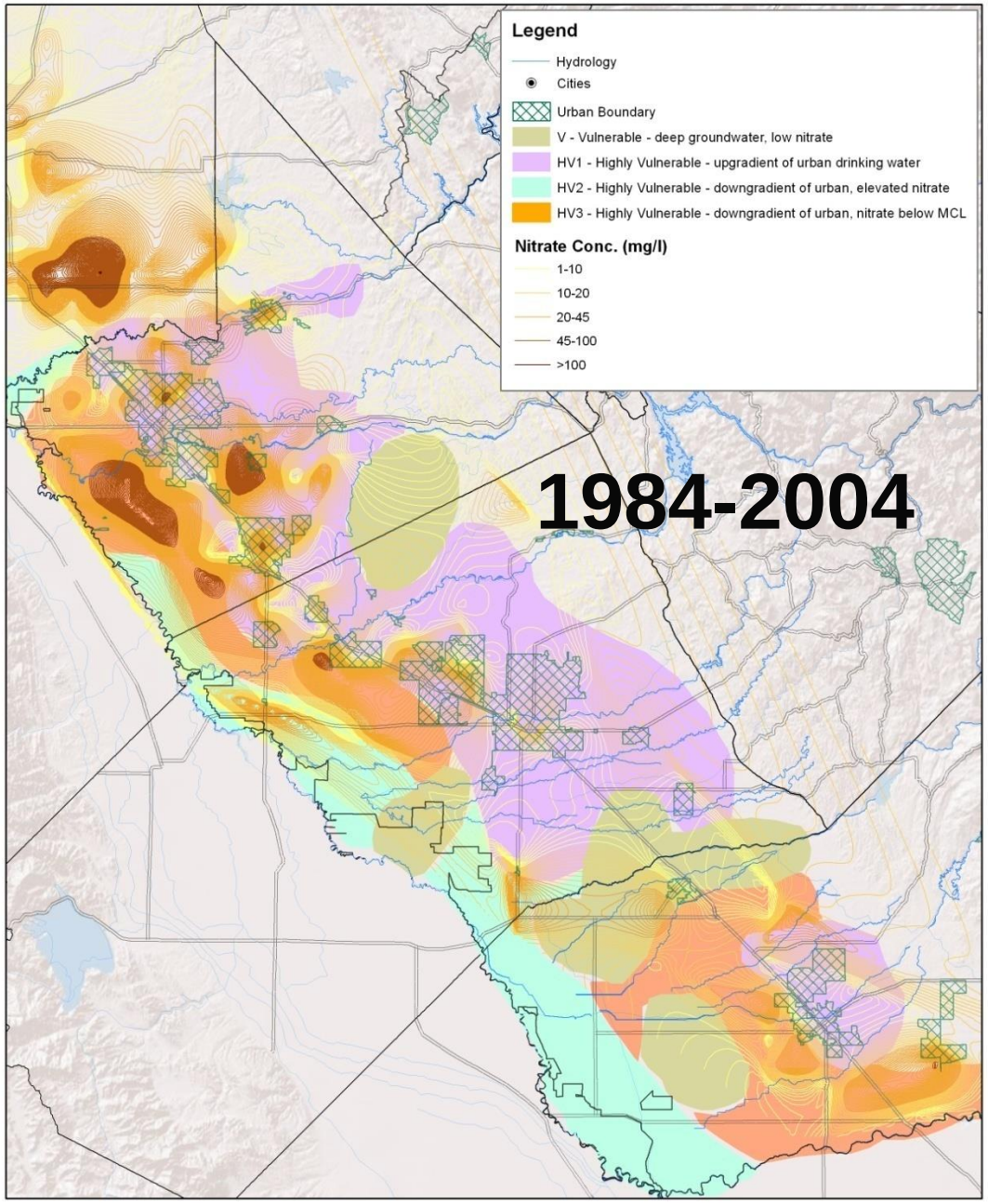
Explanation

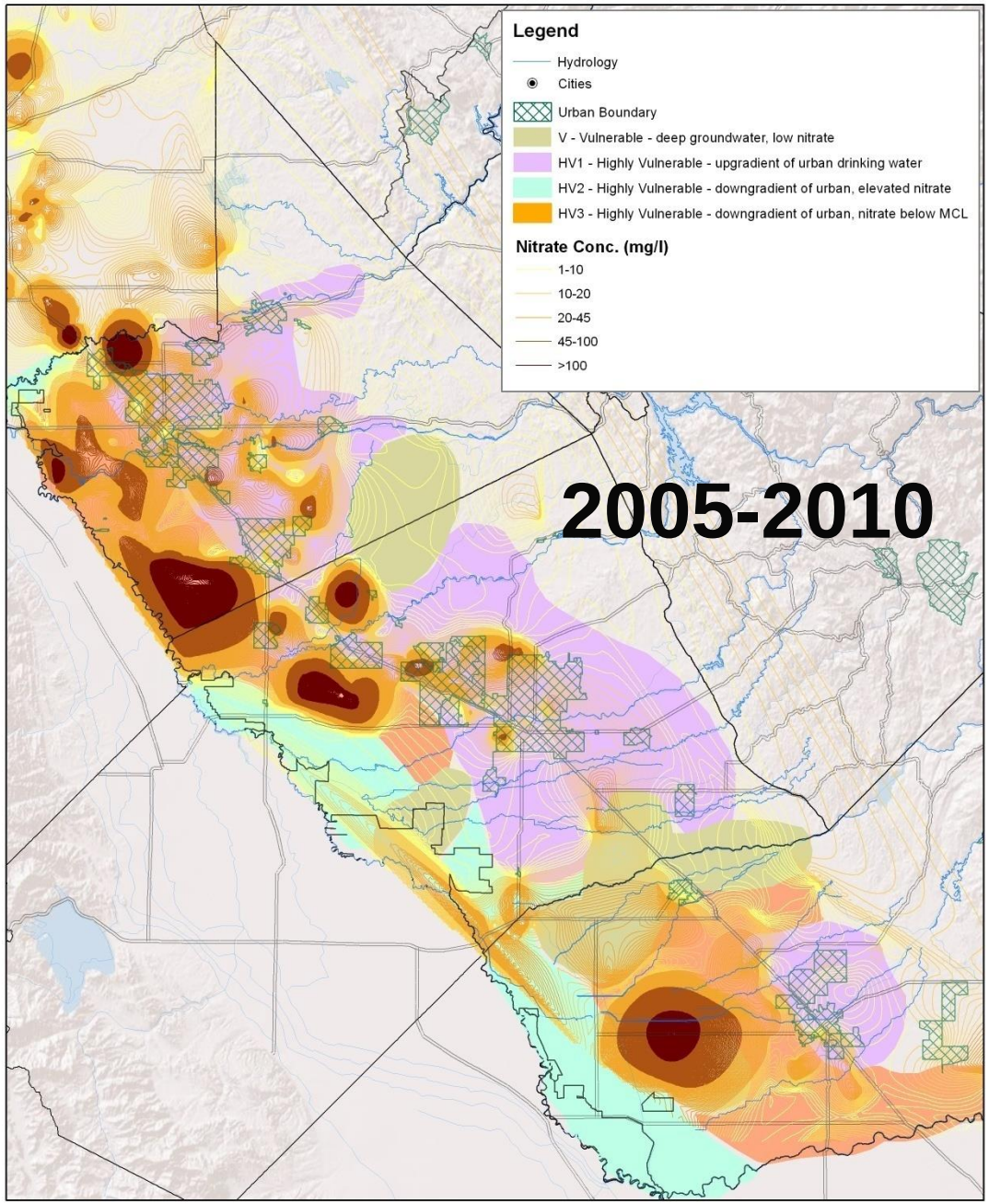
- Draft East San Joaquin Coalition Area
- Draft High Vulnerability Areas
- FMMP Areas Within High Vulnerability Areas
- FMMP Areas Outside High Vulnerability Areas

0 2.5 5 10 Miles

1:450,000

N W E S


Legend
Hydrology
Cities
Urban Boundary
V - Vulnerable - deep groundwater, low nitrate
HV1 - Highly Vulnerable - upgradient of urban drinking water
HV2 - Highly Vulnerable - downgradient of urban, elevated nitrate
HV3 - Highly Vulnerable - downgradient of urban, nitrate below MCL
Nitrate Conc. (mg/l)
1-10
10-20
20-45
45-100
>100
1984-2004
N
0
5
10
Miles
ESJWQC Vulnerable Regions &
Well NO3 Conc. 1984-2004
Date Prepared: 01/21/12
ESJWQC
ESJWQC_GW_well map 2012



N

0 5 10
Miles

ESJWQC Vulnerable Regions & Well NO3 Conc. 2005-2010

Date Prepared: 01/21/12

ESJWQC

ESJWQC_GW_well map 2012

What Will Be Required

Grower Responsibilities

- Complete Farm Evaluation *(everyone)*
- Complete Nitrogen Management Plan
  (In high vulnerability groundwater area)
  - Certified by 3rd party or grower trained
  - Low vulnerability keep on site; no certification required
- Sediment and Erosion Control Plan
  (In areas identified as high vulnerability for erosion and sediment discharge)
- More time provided for farming operations < 60 acres total

What Will Be Required

Grower Responsibilities

- Install Backflow Prevention (pressurized systems)
- Implement Wellhead Protection
- Participate in Coalition Outreach Meetings
- Allow property access to Regional Board at reasonable hours – For Compliance Inspection Purposes Only!

Farm Management Plans

- Template to be developed by coalitions, reviewed by Water Board
- Report practices “protective of surface and groundwater quality”
- Periodic Updates

  More frequently in high vulnerability areas

- Deadline for reports
  - High vulnerability: 2014
  - Low Vulnerability: 2017 (keep on farm)

Farm Evaluation Component

Wellhead Protection BMPs

- Wellhead house keeping
  - Prevent ponding for extended periods
    - Waste can enter if wellhead/casing is cracked or improperly sealed
  - Grade away from wellhead to prevent storm runoff ponding
- Open discharge well
  - Air gap between well discharge and receiving device
- Pressurized systems: Back flow preventers
  - In case of power failures and/or pump malfunction
  - Back siphoning can directly contaminate groundwater
- Abandoned wells
  - Develop plan to manage

Nitrogen Management Plans

Key mechanism to minimize nitrogen discharge to surface and groundwater

- High Vulnerability Areas
  - CCA certifies nitrogen budgets for members
    - CDFA certification program in development
  - Member self-certification with training
  - Plans kept on site, summary info reported to Coalition
- Low Vulnerability Areas
  - Required but kept on farm

Nitrogen Management Plan Components

- Apply N at crop removal rates
  - Dairies regulated to 140% of crop use (N applications)
- Test well water for nitrogen levels (then adjust N applications accordingly)
- Leaf / tissue testing
- Soil testing

- Deadline for reports
  - High vulnerability: 2015 for crop year 2014
  - Low Vulnerability: 2017 (keep on farm)

Nitrogen Management Plan Worksheet

Crop Year 2012

Member ID# 1234 APN: 111-00-222

Owner/mgr Joe Almond Field # A, B, C

CROP NITROGEN DEMAND Crop Nitrogen Needs / Uptake	NITROGEN APPLICATIONS AND CREDITS			
		Recommended N	Actual N	
Crop	**Total N applied to field (lbs/ac)**			
Almonds				
Expected yield (Lbs of production/ acre)	***Nitrogen fertilizers*** (conventional and organic)			
3000 lbs / ac	Dry & Liquid Fertilizers		100	105
Nitrogen Crop Needs to meet expected yield (lbs of Nitrogen per acre)	Foliar N fertilizers		100	90
250	Other N fertilizers		0	0
Total Acres	Organic Material N (manure, compost, etc.)		10	0
178			5	5
	Other N containing materials			
	TOTAL N APPLIED (per acre)		215	200
	Soil Nitrogen Credits	Soil N ppm [3]	Lbs N/acre	Lbs N/acre
	Nitrogen from previous legume crop		0	0
	N residual from manure applications		5	5
	Soil organic matter mineralization		5	5
	Nitrates in irrigation water (annualized)		50	50
	TOTAL N CREDITS (per acre)		60	60
	Total N Credits and Applications:		275	260
	Crop N needs:		250	250
	Balance		**25**	**10**
	Ratio		**1.100**	**1.040**

Proposed reporting of nitrogen management plan information:

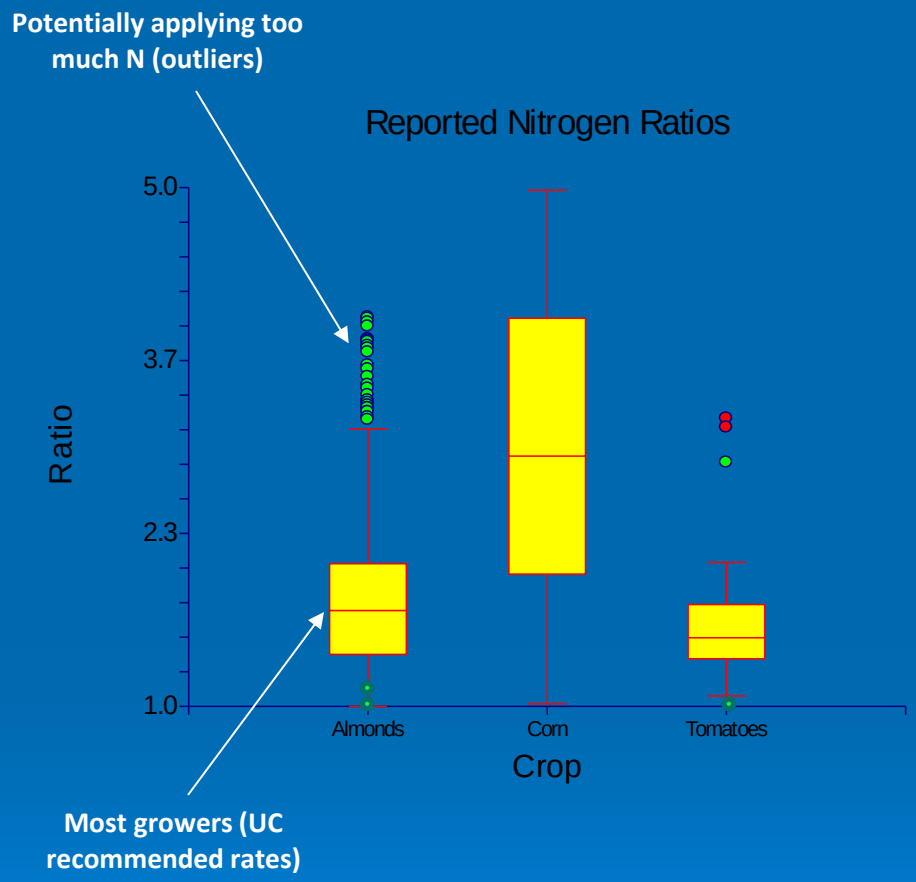
- Member submits summary form to Coalition
- Coalition compiles ratios
- Separates ratios into “Township,” crops

What the area report should show:

- Where most growers are with nitrogen ratios
- The “Outliers:” those who apply too much
- Outliers focus of outreach with commodity specific information/references

Nitrogen Management Plans & Summaries

- Goal is working toward improvements in Nitrogen management (when/if needed)
  - Focuses on crop needs – not total applied
  - Helps growers understand their use in context with like crops
  - Helps to identifies “outliers”
  - Will evolve into better management of nitrogen as information is developed


Potentially applying too much N (outliers)
Reported Nitrogen Ratios
5.0
3.7
2.3
1.0
Ratio
Almonds
Corn
Tomatoes
Crop
Most growers (UC recommended rates)

Waste Discharge Requirements

Irrigated Lands Regulatory Program

Management Practice Effectiveness Studies

Confirm that management practices implemented to improve groundwater quality are working

- Are agricultural management practices protective of groundwater?
- Modify practices if needed

Coordinated effort by coalitions/commodity groups to complete

- Share expense across Central Valley
- Coalition to present Water Board with phased approach
- CURES USDA project to be starting point for approach
  - Literature search
  - Interview experts in field

How do we best determine volume of nitrogen moving past the root zone?

Direct measurement under each field
- -- Enormous data collection
- -- Impractical

Mass loading estimates based on field trials
- -- Must be representative sites in trials
- -- May need new science to ID approaches

Fate and transport
- -- New science needed

East San Joaquin Water Quality Coalition

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